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Engineer Research and
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Research Brief: Environmental Effects of Nearshore Placement of Dredged Material

Issue

Resource agencies have concerns that placement of dredged material containing more than a few percent of fine-grained sediments in nearshore coastal waters could detrimentally affect fishery resources. Potential impacts include loss of critical nursery habitat due to the presence of turbidity plumes, blockage of migratory corridors, and effects of suspended sediments on growth and survival of larval and juvenile fish and shellfish. Also, sensitive habitats can potentially be damaged in the short term when dredged material is placed in the active zone, or in the long term as fill material adjusts to the shore face. The validity of these concerns remains uncertain, but these issues arise frequently and must be addressed during the interagency coordination process. For resource agencies to consent to nearshore placement of dredged material as a viable management technique, it must first be clearly demonstrated that potential adverse impacts can be minimized or eliminated.

Research/Objectives

The objective of this research is to document the responses of fishery resources to dredging-induced turbidity plumes and sediment resuspension in the nearshore zone. The research is measuring effects of project alterations on growth and survival of target species. Additionally, guidance on siting, timing, and a disposal mode that would minimize disturbance of nearshore habitats critical to fishery resources is being developed. Surveys of fish and shellfish occupation of nearshore habitats subject to dredged-material placement are being used to establish the functions and relative importance of these habitats to resident and transient fishery resources. These surveys, in conjunction with monitoring of potentially elevated turbidity and suspended sediment fields associated with nearshore placement, are being used to detect changes in use of these habitats. Specific concerns are being addressed by laboratory and/or field investigations of

life-history stages of key taxa to determine thresholds, types, and magnitudes of responses to conditions induced by nearshore placement practices. Recommendations and guidance on how to optimally protect biological resources during the course of nearshore placement projects will be based on the results of all studies.

Results/Products

A research plan has been developed. Initial effort led to development of a laboratory apparatus to expose fish and shellfish larvae to suspended sediments under highly controlled conditions. Deployment of laboratory gear is being coordinated with federal agencies, with preliminary experiments planned in 2002.

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